Space Weather Forecast

Issued on Saturday, 27 November 2021 at 12:48 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Chance of G1/Minor Magnetic storms day 1 (27th) and day 2 (28th) due to the arrival of a coronal mass ejection.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Very Low over the past 24 hours, with no significant X-ray flares. There are currently two sunspot regions on the visible disc. These are both relatively small bipolar regions in the southern centre disc, but have shown some development in the last 24-36 hours, although neither has produced any notable activity yet. No Earth-directed coronal mass ejections (CME) have been observed in the last 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind speed has persisted at background levels, around 300-350 km/s. The magnetic field associated with the solar wind was weak, as no notable deflection in the north-south component. This resulted in Quiet geomagnetic activity in the last 24 hours.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be Low or Very Low, with a chance of common-class flares from either of the two sunspot region on the disc. There is also an above background risk (5%) of isolated Moderate flares (R1 Blackouts)

Solar Wind / Geomagnetic Activity: A CME which left the Sun on the 24th, is anticipated to arrive sometime this evening (27th) or early tomorrow morning (28th). Confidence is low regarding any potential geomagnetic enhancement from this however, as much of the CME is expected to pass underneath Earth rather than impacting it. A further CME which occurred on the 26th has now been reassessed as likely missing, but with low confidence, giving a small chance of some impact at Earth late 29th or 30th. Background solar winds may also increase later day 1 (27th) or day 2 (28th) due to the arrival of faster wind from a coronal hole, before declining back towards background. Quiet geomagnetic activity at first, will likely become Unsettled to Active with a chance of G1/Minor Storms later day 1 (27th) or day 2 (28th) from the CME arrival. Easing back to mostly Quiet to Unsettled with a chance of Active thereafter.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms observed.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	40	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	5	5	5	5
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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